

WHAT IS CLAIMED IS:

1. A lithographic apparatus comprising:

an illuminator;

a substrate table disposed in a path of a radiation beam from said illuminator;

a patterning device support disposed to hold a patterning device in the path of the radiation beam between said illuminator and said substrate table;

a projection system disposed in a path of the radiation beam between said patterning device support and said substrate table;

a base frame;

a balance mass supported by and moveable relative to said base frame and coupled to at least one of said substrate table and said patterning device support; and

at least one supporting member attached to said balance mass and to said base frame,

wherein said at least one supporting member has a stiff portion and at least two pivot points.

2. The lithographic apparatus according to claim 1, wherein said stiff portion is substantially inflexible.

3. The lithographic apparatus according to claim 1, wherein said at least one supporting member includes an end portion at one end of the stiff portion and another end portion at an other end of the stiff portion, and

wherein the stiff portion is more stiff than at least one of the end portions.

4. The lithographic apparatus according to claim 3, wherein at least one of the pivot points is formed in a corresponding end portion by removing material from the supporting member.

5. The lithographic apparatus according to claim 1, wherein a portion of said at least one supporting member that includes said stiff portion and said at least two pivot points is machined from one piece of material.

6. The lithographic apparatus according to claim 1, wherein, for at least one of the pivot points, said at least one supporting member is continuous from one side of the pivot point to the other.

7. The lithographic apparatus according to claim 1, wherein at least one of the pivot points includes a portion that is thinner than a portion of the at least one supporting member on either side of the pivot point.

8. The lithographic apparatus according to claim 1, wherein said pivot points include hinges.

9. The lithographic apparatus according to claim 1, wherein a portion of said at least one supporting member that includes one of said at least two pivot points is rotatable relative to a portion of said at least one supporting member that includes another of said at least two pivot points.

10. The lithographic apparatus according to claim 1, wherein said at least one supporting element is disposed such that on displacement of said balance mass from an equilibrium position in which said pivot points align vertically, a horizontal force in the direction of the displacement is generated by the action of gravity.

11. The lithographic apparatus according to claim 10, wherein said at least one supporting member is disposed to provide a compensating force opposing said horizontal force.

12. The lithographic apparatus according to claim 11, wherein said at least two pivot points are situated at different distances from said balance mass.

13. The lithographic apparatus according to claim 12, wherein said at least one supporting member includes an end portion at one end of the stiff portion and another end portion at an other end of the stiff portion, and

wherein the stiff portion is more stiff than at least one of the end portions.

14. The lithographic apparatus according to claim 10, further comprising elastic structure coupled to the balance mass,

wherein said elastic structure is disposed to provide a compensating force opposing said horizontal force.

15. The lithographic apparatus according to claim 14, wherein said elastic structure comprises at least one spring coupled to said base frame.

16. The lithographic apparatus according to claim 15, wherein said at least one spring is disposed to be under compression by the action of gravity on said balance mass.

17. The lithographic apparatus according to claim 1, wherein at least one of said pivot points includes a flexible material.

18. The lithographic apparatus according to claim 1, wherein said supporting member comprises:

a middle section;

at least two base frame connecting members pivotally attached at one end to said middle section and at an other end to said base frame; and

at least two balance mass connecting members pivotally attached at one end to said middle section and at an other end to said balance mass.

19. The lithographic apparatus according to claim 18, wherein said base frame connecting members are pivotally attached to said middle section in a first plane, and

wherein said balance mass connecting members are pivotally attached to said middle section in a second plane separate from the first plane.

20. The lithographic apparatus according to claim 19, wherein the first plane is above the second plane

21. The lithographic apparatus according to claim 18, wherein said base frame connecting members are pivotally attached to said base frame in a first plane, and

wherein said balance mass connecting members are pivotally attached to said balance mass in a second plane separate from the first plane, and

wherein the first plane is above the second plane.

22. The lithographic apparatus according to claim 18, wherein a vertical position of said balance mass remains substantially constant during movement.

23. The lithographic apparatus according to claim 1, wherein at least one pivot point of said at least one supporting member has a pivot axis

which is substantially perpendicular to a plane in which said balance mass is principally moveable.

24. A lithographic apparatus comprising:

an illuminator;

a substrate table disposed in a path of a radiation beam from said illuminator;

a patterning device support disposed to hold a patterning device in the path of the radiation beam between said illuminator and said substrate table;

a projection system disposed in a path of the radiation beam between said patterning device support and said substrate table;

a base frame;

a balance mass supported by and moveable relative to said base frame and coupled to at least one of said substrate table and said patterning device support; and

at least one supporting member attached to said balance mass and to said base frame,

wherein across an entire cross-section of said at least one supporting portion, said at least one supporting portion is disposed to be under tension in a direction parallel to a principal axis of the at least one supporting portion, the cross-section being in a plane perpendicular to the principal axis.

25. The lithographic apparatus according to claim 24, wherein said at least one supporting portion is attached to the base frame above the balance mass.

26. The lithographic apparatus according to claim 24, wherein said at least one supporting element includes a cable.

27. A device manufacturing method comprising:

providing a substrate that is at least partially covered by a layer of radiation-sensitive material on a substrate table positioned on a base frame;

projecting a patterned beam of radiation onto the layer of radiation-sensitive material;

moving said substrate table relative to said base frame by generating a force between said substrate table and a balance mass; and

supporting said balance mass using at least one supporting member coupled between said balance mass and said base frame,

wherein said at least one supporting member has a stiff portion and at least two pivot points.

28. The device manufacturing method according to claim 27, wherein said at least one supporting member includes an end portion at one end of the stiff portion and another end portion at an other end of the stiff portion, and

wherein the stiff portion is more stiff than at least one of the end portions.

29. The device manufacturing method according to claim 27, wherein, for at least one of the pivot points, said at least one supporting member is continuous from one side of the pivot point to the other.

30. The device manufacturing method according to claim 27, wherein a portion of said at least one supporting member that includes one of said at least two pivot points is rotatable relative to a portion of said at least one supporting member that includes another of said at least two pivot points.

31. The device manufacturing method according to claim 27, wherein at least one supporting element is disposed such that on displacement of said balance mass from an equilibrium position in which said pivot points align vertically, a horizontal force in the direction of the displacement is generated by the action of gravity, and

wherein said supporting said balance mass includes using elastic structure coupled to the balance mass to provide a compensating force opposing the horizontal force.